THE
Storage of Flood Waters

AN ARGUMENT BY

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President of the Madera County

Chamber of Commerce

In support of a resolution passed by the Legislature of the State of California requesting the Federal Government to construct a Flood Water Canal from the San Joaquin river.

On December 24, 1911, the Legislature of the State of California passed the following resolution:

SENATE JOINT RESOLUTION RELATIVE TO A CANAL TO BE CONSTRUCTED FROM THE SAN JOAQUIN RIVER NEAR POLLASKEY, IN FRESNO COUNTY, TO A POINT IN SAN JOAQUIN COUNTY NEAR STOCKTON.

(Filed With Secretary of State December 24, 1911.)

"Whereas, There is in the San Joaquin Valley "in California a large tract of irrigable arid land, "consisting of more than one million acres, all of "which is good, rich, level, arid land, and the same "would consume all the flood waters that annual- "ly come down from the Sierra Nevada moun-

"tains through the San Joaquin and Fresno riv-
"ers, and if said waters were conserved and dis-
"tributed over said lands, the same would yield
"bountiful crops and would add great wealth to
"the State of California; and

"Whereas, All of said waters could be con-
"served and distributed over said lands by means
"of canals constructed for the distribution of
"same; and

"Whereas, If said waters were so conserved
"and distributed by means of said canal, a large
"return therefrom by annual rentals for the use
"of said waters would result in ample returns
"to the government upon the moneys
"thus expended and at the same
"time would lessen the cost of main-
"taining the levees and embankments along
"the lower San Joaquin river, and thereby mini-
"mize the danger to and loss of property occasion-
"ed by the rise and overflow of said San Joaquin
"river; and

"Whereas, Reservoirs and canals of sufficient
"capacity to conserve and carry all of said waters
"can be constructed by the federal government,
"but the cost of which would be too great for
"private enterprise or state undertaking; there-
"fore, be it

"Resolved by the senate and assembly, jointly,
"That our senators in congress be instructed and
"our representatives be requested to use all hon-
"orable means to secure the passage of a law in
"congress by which the government of the United
"States will cause a proper survey of such propos-
"ed restraining dams and canals to be made, and
"to thereafter with all reasonable dispatch con-
"struct dams and canals and to sell and dispose
"of upon such terms as may be prescribed by the
"department in charge thereof, the said waters
"for use of all the lands susceptible of being ir-

"rigated from said storage reservoirs; be it fur-
"ther

"Resolved, That a copy of this resolution be "forwarded by the secretary of the senate to each "of our senators and representatives in congress."

THE NECESSITY OF AND THE BENEFITS TO BE DERIVED FROM FEDERAL AID.

1.—The tide ebbs and flows in the San Joaquin River from Suisun Bay, a distance over 40 miles.

2.—The river is actually and continually navigated for commerce, *during low water periods,* between Suisun Bay and Stockton.

3.—The waters of the river are navigable waters of the United States, *contra-distinguished from the navigable waters of the State of California.*

4.—The irregularity of the flow of waters in said river, caused by vast quantities of flood water flowing therein, carrying silt, debris and sand, during the months of April, May, June, July and August in each year, *when the irrigation of arid lands is most beneficial,* impedes regular *commercial* navigation on the river between Suisun Bay and Stockton.

5.—During the flooding period, the channels of the river are filled with silt and sand from Suisun Bay to Sycamore Point (Herndon), a distance, over 100 miles, the removal of which, and the widening of the channels, and the dredging thereof would require the expenditure of enormous sums of money.

6.—During the flooding period, the vast acreage of low lands and the crops growing thereon, between Hill's Ferry and Stockton and between Stockton and Antioch are constantly menaced and at times are over-flowed and suffer great damage, from said flood waters breaking through or running over

the levees, the re-construction of which and the repair thereof, aside from other damage done, would require the expenditure of enormous sums of money.

7.—Within the last 21 years at least one hundred thousand acres of the low lands between Stockton and Antioch, have been reclaimed by the expenditure of enormous sums of capital, and there are now, and for many years there have been raised and produced, thereon, when not destroyed by said flood waters, vast fields of celery, asparagus, potatoes, barley, wheat, and numerous other kinds of cereals and vegetables, which are shipped to and consumed in the great seaport cities on the Bay of San Francisco and in other ports of the World.

8.—The Federal Government is morally, *if not legally,* bound to standardize said river and to protect regular commercial navigation thereon between Suisun Bay and Stockton, and said low lands and the crops growing thereon, from the ravages of said flood waters.

9.—There are over 1,000,000 acres of rich, level, arid land in Madera and Merced counties that thirst for said flood waters, and all said waters could be sold and used for the irrigation of said land with remunerative returns to the Government if the Government will construct the canal, dams and works mentioned in said resolution, the cost of which would not amount to half the sums that have been expended and wasted in removing the debris, silt and sands from said river, in widening and dredging its channels, and in constructing and repairing levees, so that said river could carry said flood waters to the sea to waste.

10.—Therefore, the people believe that there is no constitutional or other

principle of law that justifies or that would justify the government, upon precedent or otherwise, to refuse the construction of said canal, dams and works, and the sale and distribution of said flood waters at reasonable rates for the irrigation of said arid lands.

THE REASONS WHY THE FEDERAL GOVERNMENT SHOULD ASSUME THE CONSTRUCTION OF THE CANAL.

The San Joaquin river for over 100 miles from its mouth near the City of Stockton to Sycamore Point, (Town of Herndon), near Pollasky, in Fresno County, California, is declared navigable by the laws of the State of California.

Section 2349 Political Code.

THE RIGHTS OF THE UNITED STATES ARE SUPERIOR.

But said waters are navigable waters of the United States, and the United States has superior authority over said waters, because they form, by uniting with the waters of the San Francisco Bay and the Pacific Ocean, a continued highway over which commerce is and may be carried on with other states or foreign countries. *Besides, the waters of said river for over* 40 *miles are Tide Waters.*

THE FLOW OF THE SAN JOAQUIN RIVER AND ITS TRIBUTARIES

The flow of water in the San Joaquin during the fall, winter and early spring is not less than 6000 second feet, but during the flood season in April, May, June, July and August, when the irrigation of lands is most beneficial, the flow of water in the river greatly increases and fluctuates between 6000 and 50,000 second feet.

"The main annual discharge of the San Joaquin river is estimated at about 2,000,000 acre feet, and is sufficient to cover 600,000 acres of

land to a depth of 3 feet,—Page 12, U. S. Soil Survey of Madera County in U. S. Agricultural Department." *That said lands if irrigated would be worth* $100 *per acre or the total sum of* $60,000,000.

"The Fresno river carries water only during the late winter, spring and early summer months, and the Chowchilla river is similar to the Fresno,—Page 8 U. S. Soil Survey of Madera County in U. S. Agricultural Department."

WAR DEPARTMENT REPORTS THAT THE WATERS OF THE SAN JOAQUIN RIVER ARE MORE VALUABLE FOR IRRIGATION THAN FOR NAVIGATION.

War Department, United States Engineer's Office, 405 Custom House, San Francisco, California.

December 22, 1911.

Sir: It having come to the notice of the undersigned that you have expressed an interest in the pending proposition for the improvement of the San Joaquin river, California, with a view to its improvement up to a point at or near Herndon by means of locks and dams, or otherwise, you are hereby notified that the preliminary examination of the locality named, with a view to certain improvements therein, authorized by the act of Congress approved February 27, 1911, has been made and that the report submitted thereon is unfavorable to the improvement. In reaching this conclusion the local officer has been influenced by the following considerations which are discussed in the report:

1. The flow of the San Joaquin river is insufficient to properly provide for the requirements of irrigation and navigation.

2. Under the conditions obtaining in this valley greater benefit can be derived from the use of the water for irrigation than for navigation.

3. The navigation periods that might be secured by any form of improvement of this river would be too short to permit of the development of a volume of water commensurate with the cost of the improvement. * * *

(Signed.) S. A. CHENEY,
Major Corps of Engineers U. S. Army.

RE-HEARING GRANTED.

Upon appeal by Congressman Needham, the Board of Engineers for Rivers and Harbors, Washington, D. C., granted a re-hearing of said report, which is now pending before said board.

Every person residing in the vicinity of the San Joaquin river knows that the banks of the San Joaquin river for over 100 miles from Sycamore Point (Herndon) to the City of Stockton, on both sides of the stream, are very low, and in fact so low, that the regular channel never has carried and will not carry the flood waters of said river at all, and know that during the flood season in April, May, June, July and August in each year, the flood waters leave the regular channel a few miles below Sycamore Point (Herndon) in Fresno County and scatter over the plains from there to Stockton, a distance over 100 miles, and know that during those periods the river in many places is from 1 to 5 miles wide and from 1 foot deep on the surface of the plains to 20 feet deep in the many old channels following the river's course.

IN FACT, from Skaggs Bridge to LOW TIDE water, a distance, over 75 miles, the San Joaquin river has no regular channel, during the flooding period.

Between said points the great plains from the Sierra Nevada Mountains dip to the west and the great plains from the Coast Range dip to the east forming, where they meet, a low broad basin

over which the flood waters of the river accumulate and flow, in torrents, to the sea to waste.

During the flood period, said river is one vast swamp of vagrant waters, from one to five miles wide. It may be conservatively estimated that the river, between said points, inundates 500 square miles, or 320,000 acres, of land.

If said lands were reclaimed they would be reasonably worth $100 an acre or the total sum of $32,000,000.

THE WATERS OF THE SAN JOAQUIN RIVER ARE NAVIGABLE WATERS BELONGING TO THE UNITED STATES.

"WAR DEPARTMENT UNITED STATES ENGINEER "OFFICE, ROOM 405 CUSTOM HOUSE, SAN FRANCIS-"CO, CAL.

'Sir: * * *" Jan. 20, 1912.

"The question of the navigability of the San "Joaquin River does not rest upon declarations of "Congress nor upon declarations of the Legisla-"ture of the State of California. The navigability "of the stream is a question of fact. The follow-"ing quoted from the Digest of Opinions of the "Judge Advocates General of the Army explains "the matter fully.

"Those rivers must be regarded as public navi-"gable rivers in law which are navigable in fact. "And they are navigable in fact when they are "used or are susceptible of being used in their "ordinary condition as highways for commerce "over which trade and travel are or may be con-"ducted in the customary modes of trade and "travel on water. *And they constitute navigable "waters of the United States,* in contradistinction "from the navigable waters of the States, when "they form in their ordinary condition by them-"selves or by uniting with other waters a con-"tinued highway over which commerce is or may "be carried on with other States or foreign coun-

"tries in the customary mode in which such com-
"merce is conducted by water. 1. The true test
"of the navigability of a stream does not depend
"on the mode by which commerce is or may be
"conducted, nor the difficulties attending naviga-
"tion. It would be a narrow rule to hold that in
"this country unless a river was capable of being
"navigated by steam or sail vessels, it could not be
"treated as a public highway. The capability of
"use by the public for purposes of transportation
"and commerce affords the true criterion of the
"navigability of a river, rather than the extent
"or manner of that use. If it be capable in its
"natural state of being used for purposes of
"commerce may be conducted, it is navigable in
"fact and becomes in law a public river or high-
"way. 2."

"(1. The Daniel Ball, 10 Wall., 557.)

"(2. The Montello, 20 Wall., 430.)

"Respectfully,

(Signed) "W. P. HOXEY."

"Captain, Corps of Engineers, U. S. Army."

THE NEWLANDS BILL.

The California Legislature, in passing said resolution, had in view the passage of the Bill introduced in the United States Senate by Senator Newlands from Nevada.

The objects of the Newland's Bill are concisely stated in its enacting clause and in section 1 of the proposed act, which are as follows:

A BILL TO CREATE A BOARD OF RIVER REGULATION AND TO PROVIDE A FUND, FOR THE REGULATION AND CONTROL OF THE FLOW OF NAVIGABLE RIVERS IN AID OF INTERSTATE COMMERCE, AND AS A MEANS TO THAT END TO PROVIDE FOR FLOOD PREVENTION AND PROTECTION AND FOR THE BENEFICIAL USE OF FLOOD WATERS AND FOR WATER STORAGE AND FOR THE PROTECTION OF

WATER SHEDS FROM DENUDATION AND EROSION AND FROM FOREST FIRES AND FOR THE CO-OPERATION OF GOVERNMENT SERVICES AND BUREAUS WITH EACH OTHER AND WITH STATES, MUNICIPALITIES AND OTHER LOCAL AGENCIES

"BE IT ENACTED, etc., That the "sum of $50,000,000 annually for each "of the 10 years following the 1st "day of July, 1911, is hereby reserved, "set aside, and appropriated, and made available "until expended, out of any moneys not otherwise "appropriated, as a special fund in the Treasury "to be known as the 'River Regulation Fund,' to "be used for the regulation of "interstate commerce and in aid there-"of for examinations and surveys and for "the construction of engineering and other works "and projects for the regulation and control of the "flow of navigable rivers and their tributaries and "source streams, and for the standardization of "such flow, and for flood prevention and protec-"tion, by the establishment, construction and "maintenance of natural and artificial reservoirs "for water storage and control, and by "the the protection of watersheds from "denudation and erosion and from "forest fires, and by the maintenance and "extension of woodland and other protective cov-"er thereon, and by the reclamation of swamp "and overflow lands, and by the building of drain-"age and irrigation works, and by doing all things "necessary to provide for any and all beneficial "uses of water that will contribute to its conserva-"tion or storage in the ground or in surface "reservoirs as an aid to the regulation or control "of the flow of rivers, and by acquiring, hold-"ing, using, and transferring lands and any other "property that may be needed for the aforesaid "purposes, and by doing such other things as may

"be specified in this act or necessary to the accom-
"plishment of the purposes thereof, and by secur-
"ing the cooperation therein of States, municipal-
"ities, and other local agencies, as hereinafter
"set forth, and for the payment of all expendi-
"tures provided for in this act; the purpose of
"this act being river regulation and the control of
"the volume of water forming the stage of the
"river from its sources, so as to standardize the
"river flow, as contradistinguished from and sup-
"plemental to channel improvement as heretofore
"undertaken and provided for under the various
"acts commonly known as the river and harbor
"acts."

THE PEOPLE OF THE STATE OF CALIFORNIA INDORSE THE FOLLOWING REMARKS MADE BY SENATOR NEWLANDS IN THE UNITED STATES SENATE ON FEBRUARY 15, 1911, TO WIT:

IMPORTANCE OF REGULATING RIVER FLOW.

"Mr. President, what does the development of
"the waterways as efficient machines for trans-
"portation require? It requires primarily the
"regulation of river flow; that is the first thing
"that must be controlled. For if the flow of the
"rivers be regulated in such a way as to avoid
"the extreme of floods and the opposite extreme
"of low water we will always have in the rivers
"a navigable stage of water to transport boats
"for passengers and freight. If we regulate
"the stream flow, in order practically to standard-
"ize our navigable rivers, we will have accom-
"plished almost everything that is desirable in
"regulating these rivers for the purposes of inter-
"state commerce.

"How can that stream flow be regulated and "controlled? First, by the prevention of floods. "The necessity for protection from and the pre-

"vention of floods lies right at the foundation of "any broad policy for maintaining permanently "navigable channels in our rivers."

"And how are floods to be prevented? We can "make use of the natural reservoirs which nature "has afforded for the absorption of the waters "that fall from the heavens, and we can create "artificial reservoirs for the storage of flood "waters."

* * *

ENORMOUS ANNUAL DAMAGE BY FLOOD.

"Now, what are the natural reservoirs of wat- "ers? Clearly, they are the forests *and the agricul- "tural lands which absorb the rain- "fall and the melting snows.* Our aim "should be to everywhere increase the "porosity and absorbent properties of "the soil, so that it will absorb as much as possible "of the waters that fall from the heavens and thus "prevent the precipitate run-offs which swell our "streams and navigable rivers into great floods, "hurling destruction along their pathways and "inflicting an annual damage upon property "which it is estimated aggregates the stupend- "ous sum of nearly $200,000,000 every year in the "United States.

* * *

FLOOD PREVENTION AN INTERSTATE PROBLEM.

"And so it is everywhere. Various localities "are considering this question of flood destruc- "tion and are working at the problem, not only "in its local aspects but in its national aspects. "The States that are at the lower end of these "rivers are beginning to realize that it is the duty "of the States above them and of the Nation to "see to it that the lower States are not dam- "aged by disastrous sudden run-offs and floods

"and freshets. They are beginning to see that "the question of the regulation and development "of these interstate rivers and the control of "these flood waters is not a purely local matter, "attaching to the locality threatened with im- "pairment or destruction. It involves the pow- "er of the entire Nation, for these rivers with their "sources exist utterly regardless of State lines "and the power to be exercised over them ulti- "mately and in the greatest degree is the national "power over navigation.

"Mr. President, it is true that the main power "over these rivers is in the Nation, and that it "arises from the power which gives the Nation "the control of transportation, the control of in- "terstate commerce, the control of navigation. "But that is the only interest which the Nation "has in these rivers which gives it power to regu- "late and control them. Every other interest be- "longs either to the State or to the inhabitants "of the States or to agencies created by the "States, and hence it is necessary, if we are to "have a full development of these rivers for every "useful purpose, to see to it that the Nation is "brought into co-operation with the States in the "study of the problems involved and in the exe- "cution of works relating to the regulation and "development of our rivers.

STORAGE RESERVOIRS AID NAVIGATION.

"Now, Mr. President, the artificial storage of "waters accomplishes two purposes. In the arid "and the semi-arid regions it provides for the im- "pounding of flood waters which are led out over "the thirsty lands, adjacent to the "rivers, *and are there absorbed by "the soil* and prevented from flowing "down below and vexing neighboring States at "the period of floods, and they are there held until

"they gradually seep through the soil back into "the rivers themselves. They thus return to the "channel in the form of return seepage during the "period of drought and low water, when they "augment the flow of the river and enlarge the "usefulness of its channels for purposes of "navigation. So the artificial storage for irri-"gation of water in the Rocky mountains, upon "rivers which are tributary to the Mississippi and "the Missouri; and in the Sierra Nevada Moun-"tains, upon streams which are the sources of "rivers that empty into the Pacific Ocean, becomes "a question not only involving the neighborhood "in the reclamation of arid lands, but involving "the entire scheme of river regulation and water-"way development below in the interest of flood "prevention and of navigation."

* * *

CEASE CONTEMPLATING AND BEGIN ACTION.

* * *

"In doing so, and as a means to that end, it "will protect from destructive floods the cities "and communities, the farms and plantations "that line their banks.

"It will, by the storage of the flood waters in "surface reservoirs and in the ground, control "for beneficial use the floods that now cause "such appalling waste and destruction. That use "will include water power and fertilizating and "irrigating farm lands for crop production, thus "reducing the cost of living by enormously in-"creasing food production."

* * *

"It will provide a way to completely accomplish "the reclamation of all arid or semi-arid and all "swamp and overflow lands by building irriga-"tion and drainage works that will directly influ-

"ence and regulate the flow and navigability of "our rivers.

"The fact undoubtedly is that the problems of "forestry, irrigation, drainage, flood protection, "water-power development, and enlarged food "production by the intensive cultivation of small "farms are but parts of one great whole, which "is the conservation and regulation of the water "supplies of the country, which are the sources of "the waters flowing in our navigable rivers and "necessary to navigation.

"It is therefore essential to any complete and "adequate solution of the great problem of main- "taining a navigable stage of water at all times "in our navigable rivers that all these interrelated "and indivisible questions should be considered "together in making plans for river regulation."

* * *

STATES SHOULD CONTRIBUTE TO COST.

"I do not question the power, therefore, of the "Nation to enter upon all these works exclusively "and regardless of the States, but I favor a system "of co-operation between the State and the Na- "tion which will enlist the active interest of the "States in these plans and works with a view to "enlisting their co-operation in the way of contri- "butions to the cost, inasmuch as they join with "all other States in the receipt of benefits.

"Mr. President, what have we been doing with "reference to the regulation of the flow of rivers? "Have we made any progress thus far? For a "hundred years we have been improving our "rivers. Where can anyone point out to me any "well-developed plan for the regulation of river "flow? Oh, yes, we have passed bills for dredging "channels here and there, taking out the silt and "the soil which has been allowed unnecessarily to "drift into those channels. We have also pro-

"vided in places for bank protection by raising the "levees so as to prevent the flood from overflow- "ing the adjoining lands, and with a view to main- "taining a definite and fixed channel for an other- "wise capricious river. We have done that, but "we have never entered scientifically upon the "question of the regulation of the flow of a river, "involving standardizing the flow of that stream *"by storing the floods when they are likely to be "destructive and using those flood waters for* "beneficial purposes, utilizing not only the natural "reservoirs of the country in the shape of the for- "ests and the cultivable soil, but also the artificial "reservoirs necessary for the promotion of ir- "rigation and the development of water power.

"Incidentally, in connection with this question "of river regulation, comes the question of swamp "land reclamation, the antithesis of the irrigation "of the arid lands of the remote mountain regions, "for just as you have too little water above and "you desire to increase the supply of water to the "land by artificial storage and irrigation, so be- "low you have too much water, and you seek to "avert the destructive floods which prevent the "cultivation of vast areas by storing these flood "waters above for irrigation and water power, "and by erecting levees and providing for the "revetment of the banks with a view to harness- "ing and controlling the rivers in such a way as "that they will not promote destruction or inter- "fere with cultivation."

CONGRESS IS LAGGING BEHIND PUBLIC OPINION.

* * *

"This waterway agitation has been going on for "years. Public opinion has been formed upon it. "Congress is lagging behind public opinion upon "this question.

"Waterway associations and congresses and "conventions have been meeting throughout the "entire country, upon the Pacific coast, in the "Mississippi River Valley, in the Missouri River "Valley, the upper Mississippi, the Cumberland, "and the Ohio. Waterway associations have been "meeting on the Atlantic coast. They have pre-"sented their resolutions in favor of broad and "comprehensive plans and they have "shaped the opinion of the coun-"try, which sustains them through "the utterances of our newspapers and our maga-"zines. Yet Congress has not moved efficiently "upon this subject. It is taking it up in sections or "it is taking up a project here and a project there "and a project at some other place, all unrelated to "each other—the interest of a Senator or a Con-"gressman being in the particular project within "the area of his constituency, and that alone."

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PUBLIC SENTIMENT IS RIPE FOR ACTION.

"Public sentiment is ripe upon this question "and Congress has lagged behind."

* * *

COUNTRY NOW DEMANDS CONSTRUCTION,—NOT INVESTIGATION.

* * *

"The American people want some kind of an "organization that will do. They are of the opin-"ion that Congress has thought long enough up-"on this subject to enable it to do, and to start now "to do the right thing. We have lived through "the era of investigation. It has lasted too long. "The people are now ready for construction. They "are demanding it with no uncertain voice."

NATIONAL IRRIGATION CONGRESS INDORSES SENATOR NEWLAND'S BILL.

The Great National Irrigation Congress held in Chicago between December 5th and 9th, 1911, considering the importance of the passage of Newland's Bill, passed the following resolutions:

"We endorse and commend the Newlands Bill, "S. 122, to create a Board of River Regulation, "and we urge every delegate to this Congress to "co-operate in all possible ways to aid in securing "its enactment by the Federal Congress during "the present session.

"We favor the preservation and development "of our national resources by the construction of "storage reservoirs by the Federal Government "for flood protection, and to save for use in "aid of navigation and irrigation the flood waters "which now run to waste and cause overflow and "destruction."

CALIFORNIA HAS MORE ARID AND SEMI-ARID LAND THAN ANY OTHER STATE IN THE UNION.

The people of the State of California are ever ready to aid the several states in any project that inures for the benefit of the nation and to the common good of its people; but owing to the great influx of people in this State from sister states, and the cry, from every direction, for small tracts of lands to make homes upon, the time has arrived when the people of the State are compelled to solicit the aid of the Federal Government in the storage and the distribution of the flood waters of navigable streams, thereby protecting the homes of those residing on the low lands along the banks of the rivers, in re-claimed districts, while at the same time furnishing those on the uplands with water to quench the thirst of their parching soils.

It may be within the memory of some our Representatives when Congress, to induce settlement and the building of homes on the Great Praries of the Central States, and in the "Great American Desert," encouraged tree planting and the cultivation of the soil to hold moisture and precipitate rainfall; and it was from the wise legislation of our National Government that transformed the Great Prairies and the "Great American Desert" into one of the greatest and richest agricultural districts in the world.

But, in California, the conditions are different. No amount of tree-planting or cultivation of the soil here will bring us greater rainfall. The moisture from the great Pacific Ocean in the winter passes over the great valleys and plains of California and lodges in the high mountains in the form of snow. In the spring this snow melts and comes down from the mountains in torrents, filling the many channels that otherwise remain dry, to their banks with gushing waters, racing back to the sea.

In the Eastern States the people depend upon rainfall.

In California, the great agricultural districts of the interior, are compelled to depend upon irrigation.

Without irrigation in California our people would be in the same condition as the people of the Great Eastern, Southern and Northern states would be without rainfall.

An investigation of the records shows that California has not gotten her share of the appropriations made for the Irrigation of the arid lands of the West.

We call your attention to the following excerpts taken from a reliable article recently published in the California press:

THE FEDERAL IRRIGATION ACT.

"Since the passage of the irrigation act, $119,-
"550,000 has been expended in reclamating arid land, *yet* in California, where there is more arid "and semi-arid land than in any other state in the "Union, a very small amount of this fund has been "expended. The amount used in California "amounts to practically nothing.

"FUNDS DISTRIBUTED.

"Other states in the West have received from "that fund the following amounts:

"Arizona	$13,640,000
"Colorado	9,865,000
"Idaho	19,719,000
"Nebraska-Wyoming	10,280,000
"Montana	15,695,000
"New Mexico	10,250,000
"Nevada	6,380,000
"North Dakota	880,000
"Oregon	6,060,000
"South Dakota	3,000,000
"Utah	2,063,000
"Washington	11,558,000
"Wyoming	6,750,000

"California's sum total in one pro-
"ject up to this time is only $620,-
"000 and the combined so-called Ore-
"gon-California and the Arizona-California "projects will complete every ditch on the Cali-
"fornia side of the State lines for less than $250,-
"000."

"INTERESTING FIGURES GIVEN.

"The ninth annual report of the reclamation "service, issued by F. H. Newell, director, gives "some interesting figures on the amounts spent in "reclamation work and the amounts received from "the sale of land in California and the states of the "West. These figures are complete "to June 30, 1910, and show that

"while most Western states have received "far greater sums from the National Treasury "for irrigation work than they have contributed "from the sale of land, California has been re- "turned less than half the amount it has con- "tributed.

"Moreover, the Government figures of 'allot- "ments' do not agree with the "actual amount expended. In the "case of California the amount actually "expended is more than a million less at the pres- "ent time than the 'allotment' figures in the report "of 1910, while in the case of some other states, "as Idaho, the amount expended at the present "time is far in excess of that given as 'allotted' "in 1910.

"GOVERNMENT REPORT.

"The Government figures are as follows:

	Receipts.	Allotments.
"Arizona	$ 703,648 90	$12,663,763 25
"California	4,195,585 79	1,958,631 68
"Colorado	5,158,353 73	4,684,352 95
"Idaho	4,236,474 52	8,270,456 88
"Montana	5,813,612 53	4,737,393 45
"Nevada	335,737 32	4,225,452 01
"Oregon	9,398,703 01	3,204,664 77
"Wyoming	3,254,688 76	5,379,047 66

OUR ARID LANDS.

"We have more semi-arid land than Montana, "yet they are in front with $15,695,000, and our "needs are equal to that State, and we have the "semi-arid land and the water just as they have, "but those Montana men went after those mil- "lions while our people reposed in a somnolent "sleep.

"The Land Commissioners of Idaho, in their "last report, say that forty-nine private irriga- "tion companies are operating in that common- "wealth. If that is true a very large part of their

"land is taken up, and California has five times "as much available land for irrigation as Idaho, "and yet the latter gets $19,719,000 to our $620,- "000.

THE CALIFORNIA PROJECTS.

"How did it come that we actually got the little "sum of $620,000 for the Orland project? Well, "we owe that enterprise to the work of one man, "Frank Freeman, a lawyer up at Willows. He "worked in season and out of season for three "years. Then he packed his grip and went to "Washington and through the labors of Congress- "man McKinlay secured the above sum.

"Now as for the Oregon-California, or better "known as the Klamath project, they have in Ore- "gon 300,000 acres and about 10,000 acres in "California and nothing will be done to reclaim "our land across the line for years to come. This "$4,860,000 spent by the Government was, and is, "for Oregon and not for us.

"Take the so-called Arizona-California project "at Yuma. There $5,000,000 is being "spent and 110,000 acres in Arizona "and only a small tract over in "California is being irrigated for only a small part "is carried over on the California side, where "most of the lands are included in the Indian "reservation, and not $100,000 will ever be spent "on the lands on our side of the line. These last "two projects have been paraded before our peo- "ple as California enterprises, or joint ones, with "states named. and we protest against their being "held up as California projects in any respect. "They are Oregon and Arizona enterprises pure "and simple."

CALIFORNIA HAS NOT GOTTEN HER SHARE

"The small amount of money expended by the "National Government in irrigation and reclama-

"tion work in California as compared with that "spent in other Western states is becoming the "cause of increasing and vigorous criticism "throughout the State."

LOCAL CONDITIONS, AND THE BENEFITS THAT WOULD BE DERIVED FROM THE SALE AND THE DISTRIBUTION OF THE FLOOD WATERS OF THE SAN JOAQUIN RIVER FOR THE IRRIGATION OF ARID LANDS.

Having shown the necessity of standardizing the San Joaquin river and the necessity of protecting commercial navigation thereon between Stockton and Suisun Bay, and the necessity of protecting the many 100,000 acres of low lands and the crops growing thereon, along the banks of said river, between Hill's Ferry and Stockton and between Stockton and Antioch, from the ravages of the flood waters that periodically flow in the San Joaquin river *when irrigation is most needed,* and the failure of California to get her share of the appropriations made under the Federal Irrigation Act, Congress, necessarily, wants to know the location, the nature, the conditions, and the acreage of the unirrigated lands at the head of the proposed canal and along its course, upon which the flood waters of the San Joaquin river and its tributaries may be sold and distributed for irrigation purposes.

THE LOCATION OF THE PROPOSED CANAL AND WORKS.

The proposed canal would commence on the north bank of the San Joaquin river, at the edge of the foothills in Madera county, and near the town of Pollasky.

The water would be diverted from the river into the canal by means of a restraining dam.

From there the proposed canal would follow the edge of the foothills as near as may be, across

Madera and Merced counties and possibly across the counties of Stanislaus and San Joaquin.

The canal (if constructed its entire length) would cross the Fresno, Chowchilla, Merced, Tuolumne and Stanislaus rivers, and by the use of restraining dams in these rivers, for the canal crossings, great quantities of the flood waters flowing in said rivers could be stored. The banks of the Fresno and Chowchilla rivers and of all other channels between the San Joaquin and Merced rivers, where the canal crossings would be made, are very low and are not over 20 feet high.

Many natural shallow reservoir sites would be intersected by the canal along its course across Madera and Merced counties with many thousand acres of land in each that could be used as impounding reservoirs without a great expenditure of money.

It is apparent, even to the laymen residing in the vicinity, that the construction of the works from the San Joaquin river across Madera and Merced counties to the Merced river, a distance of 60 miles, would be a very easy problem, and could be done at a cost not exceeding $5,000,000.

Over 1,000,000 acres of unirrigated arid lands in Madera and Merced counties could be irrigated from the system at a primary cost, for construction, not exceeding $5 an acre, which would make it one of the greatest and least expensive irrigation systems in the world.

It is conservatively estimated that all the flood waters that ordinarily flow in the San Joaquin river would be consumed in the irrigation of the unirrigated arid lands in Madera and Merced counties, and if such be the case, the canal need not be constructed farther than the Merced river, the channel of which has sufficient capacity to carry to the San Joaquin river at

Hill's Ferry all flood waters flowing in the canal that may not be used upon the unirrigated arid lands in Madera and Merced counties.

Besides, it is a well known fact, that a great percentage of the unused impounded waters along the route of the canal, would pass off by evaporation and seepage.

Madera County, alone, has 600,000 acres of unirrigated arid land which would consume the greater part of the flood water of the system.

The location, the nature, the condition, and the acreage of the unirrigated arid lands in Madera county are accurately and officially stated in the soil survey of Madera County, made by the United States Agricultural Department, to wit:

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS.

Washington, D. C., April 19, 1911,

Sir: In order to meet the urgent requests for soil survey work in Madera County, Cal., indorsed by Hon. J. C Needham, within whose congressional district the area lies, work was undertaken in this county during the field season of 1910.

I have the honor to transmit herewith the manuscript report and map covering this area, and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1910, as authorized by law.

Respectfully,
MILTON WHITNEY,
Chief of Bureau.

Hon. James Wilson, Secretary of Agriculture.

The following are excerpts taken from the published report of the said Soil Survey.

DESCRIPTION.

"(p. 7.) The Madera area, California, "covers the western third of Ma- "dera County, which lies very nearly "in the geographical center of the State,

"a little south of the center of the Great Interior "Valley. It is about 200 miles south of San Fran- "cisco and Sacramento and 300 miles north of "Los Angeles.

"The San Joaquin Valley is drained to the north "by the San Joaquin River and numerous tribu- "taries rising in the Sierra Nevada Mountains on "the east.

"(p. 8) The Madera area extends "from the San Joaquin River on "the west eastward to the moun- "tains. The southern boundary is also formed by "the winding course of the San Joaquin River, "while the northern boundary is marked mainly "by the Chowchilla River.

"The area is roughly rectangular in shape, is "about 36 miles in length, 25 miles in width, and "covers about 919 square miles, or 588,160 acres.

"A portion of the area extending a few miles "along the San Joaquin River was covered by "high water or was in a swampy condition mak- "ing it impracticable to survey portions of the "course of the stream.

"For about half the distance along the southern "boundary of the area the San Joaquin River "flows between bluffs 20 to 199 feet in height, and "the meandering of the stream between these "bluffs has left many irregular areas of rich al- "luvial bottom lands, excellently adapted to sev- "eral types of farming. West of Skaggs Bridge "the land surface drops more rapidly, and for the "remainder of the distance the river is but a few "feet below the surrounding country. Along the "lower course of the stream occasional shallow "lagoons mark former channels of the stream, and "shallow, poorly defined sloughs indicate former "overflow channels. Fresno River, flowing "through the central part of the area, is a small "stream rising in the eastern Sierras. It carries

"water only during the late winter, spring, and "early summer months.

"(p. 8) The Chowchilla River, which forms "the northern boundary of the area, is similar to "the Fresno River. In addition to these larger "streams there are many small intermittent (p. 9) "streams issuing from the foothills or arising in "the dissected plains. These streams carry water "only during the rainy season and rarely have "any connection with larger streams, but disap- "pear on reaching the more level plains.

"Dense growths of willow, cottonwood, and "sycamore, with a tangle of underbrush, occur "along the San Joaquin River, while the larger "intermittent streams are usually fringed with a "growth of cottonwood or sycamore. On the "higher lands in the eastern part of the area a "scattering growth of oak is usually found. The "remainder of the area is treeless, except for such "plantings as have been made by landowners.

"The county is still sparsely settled.

"After the building of the railroad, "the town (City) of Madera sprang "up. This is now the county "seat and commercial center of the county. It is "a town (city) of about 3,000 population and has "a lumber mill, sash and door factory, banks and "numerous substantial business firms. Its posi- "tion is such that it will be the "principal town (city) of the area, "and any increase in the agricultural "prosperity of the county will result in increased "business for this town (city).

"Good transportation facilities are offered by "the Southern Pacific and Atchison, Topeka & "Santa Fe Railroads, which give an outlet to all "large commercial centers.

CLIMATE.

"The climate of this section is in general fea-"tures similar to that of the rest of the interior "valley. It is characterized by two seasons, the "dry or summer season, and the wet or winter "season. The first is marked by a period of "bright, warm, sunshiny days, with an entire "absence of rain. The wet season consists of "periods of cool, rainy days and foggy mornings, "broken by intervals of clear, warm weather.

"(p. 11) The rainy season normally extends "from November to March, but little rain (too "little to be of any value to growing crops) oc-"curring outside of this period. There is con-"siderable variation from year to year in the dis-"tribution of the rainfall, and *nonirrigated* crops "frequently suffer from a lack of moisture in the "spring even when the total amount of rain has "been up to or above normal.

"(p. 11) During the summer months, June, "July, and August, the mean daily temperature "is above 80 degrees F. * * *

"These temperatures are seldom op-"pressive, owing to the lack of moisture "in the air. With the intense sunshine the con-"ditions are extremely favorable for the rapid "maturing of all crops. The nights, even after "the hottest days, are usually cool. This is due "to what is locally known as the 'sea breeze,' "which is a light cool breeze which springs up "soon after sunset.

"Hailstorms are unknown, electrical storms are "rare, and the velocity of the winds never suf-"ficient to injure fruits or trees."

AGRICULTURE.

"(p. 12) A study of the agricultural develop-"ment of this area shows that it is far behind "practically every other section in the San Joaquin "Valley, although as far as fertile soils is con-

"cerned no such difference exists. The lack of "progress in Madera County is due primarily to "one factor—*the inability to secure an adequate "supply of irrigation water, which is necessary "for the highest development of these lands.* Other "contributing causes, although essentially minor "ones, are * * * a lack of knowl- "edge of the efficiency of pumping "plants for irrigation purposes, and the high cost "of reservoirs for the storage of flood waters of "the various streams.

"The inability to secure irrigation water for "the present grain lands is due to the conditions "which make it possible for one or a few individ- "uals to control the entire flow of the water in a "stream. The main annual discharge of the San "Joaquin River is estimated at about 2,000,000 "acre-feet, and this is sufficient to cover the entire "area surveyed to a depth of 3 feet and still allow "nearly a half million acre-feet for canal systems "farther down the stream. *As conditions now "stand not a foot of this water may be used, ex- "cepting by large landowners in the "western part of the county, and "thousands of acres of grain land must "remain undeveloped when they are "capable of supporting a family to every 20 acres.* "The other conditions mentioned—large hold- "ings, etc.—would shortly disapper *were irriga- "tion* possible, as the owners of the large holdings "could not withstand the high prices that would be "offered for their land under the improved con- "ditions.

"As has been mentioned, the larger part of the "dry lands in the area are devoted to grain farm- "ing. According to the assessors' figures for "1907-8 over 240,000 acres were planted to grain "and a return of nearly $900,000 was secured.

"(p. 13.) The present grain-farming "lands sell for from $15 to $50 "an acre, the price being governed by "both character of soil and convenience of loca- "tion. The *values of irrigated land* range from "$50 to $200 an acre, depending upon soil, loca- "tion, and improvements. In general land prices "are very reasonable, as based upon the earning "power of the soil, and in many cases much cheap- "er than similar lands in other parts of the val- "ley.

"(p. 14). *The highest development of the agri- "cultural resources of the Madera area depends "upon the securing of irrigation for the extensive "area of lands at present dry farmed,* and also "upon the subdivision of the large estates and in- "dividual holdings and the substitution of the "small, intensively operated farm. With these "changes in the existing order of things and with "the proper method of cultivation the soils of the "region are capable of producing abundantly al- "most any agricultural product suited to the "climatic conditions.

"Alfalfa is grown on the soils of the Hanford, "Fresno, and Madera series, *under irrigation,* the "yield depending largely upon the preparation of "the land and subsequent care of the fields.

"Grapes for either wine, table, or raisin pur- "poses are grown on the Hanford soils near Ma- "dera and along the Chowchilla River in the "northern part of the area.

"(15) In the soils of the Hanford and Fresno "series, where unfavorable soil conditions do not "exist, the Sultanina (Thompson Seedless), Mus- "cat (Muscat of Alexandria), Malaga, and Al- "meria are varieties well adapted to local condi- "tions. In the red plains soils (San Joaquin and "Madera series) the Emperor, Flame Tokay, Ali-

"cante Bouschet, and Val de Pinas will be found "to give good results.

"Fig trees (*with irrigation*) will grow and do "fairly well on many of the poorer soils, but they "attain the best development and give the most "fruit on the lighter well-drained soils of the "area.

"The principal varieties of the fig are the Mis- "sion, Adriatic, and Smyrna, all of which thrive in "this section.

"Like the fig the olive is found scattered "throughout the area.

"The average yield is said to be slightly over 2 "tons per acre, the fruit bringing from $25 to "$50 a ton, according to the variety and qual- "ity.

"The olive has been grown in the State since "the time of the early missions, and has been "found to succeed on soils ranging from stony "hillside lands to rich alluvial river bottoms. Al- "though it will survive on apparently poor soils, "its commercial planting should be confined (p. "16) to the deeper, more level soils where irriga- "tion is possible, as larger and more profitable "yields will be secured under such conditions.

"In the higher, warmer locations of the area "planting of the Washington Navel and Valencia "late varieties oranges should be made. Plantings "of seedling varieties—Mediterranean Sweet, "Parson Brown, and Joppa— may be made, but "these are not as profitable as the first mentioned "varieties.

"The almond is not extensively grown in this "area, although suitable locations exist for its cul- "ture.

"Peaches are grown extensively in the *irrigated* "section of the area near Madera, and the re- "turns have been very satisfactory. With few "exceptions the soils of this part of the area are

"very well adapted to this fruit, and *with the ex-*
"*tension of irrigation systems* some of the lighter
"soils of the Fresno and Madera series farther
"south will be found suitable for this fruit.

"(p. 17) The larger part of the peach crop is
"dried and sold to packing companies, who pro-
"cess and pack the fruit for the trade. Varieties
"which will do well in this area are the Crawford,
"Muir, Tuscan, Phillips' Cling and Elberta.

"Some plums and prunes are grown in the
"area.

"The matter of growing small fruits has re-
"ceived little attention and the market situation
"allows of considerable development along this
"line.

"The growing of the Eucalyptus is worthy of
"much more attention than is now given to it.
"The magnificent growths which have been
"made by individual trees and by small groves
"leave no room for doubting that Eucalyptus will
"succeed admirably in this section.

SOILS.

"(p. 19) *The following table gives the name*
"*and extent of each of the soil types mapped in*
"*the Madera area*:

Areas of Different Soils.

Soil	Acres.	Per Cent.
San Joaquin sandy loam	137,644	23.4
Fresno fine sandy loam	84,672	14.3
Madera sandy loam	74,368	12.6
Hanford sandy loam	65,024	11.1
Fresno loamy coarse sand	41,344	7.0
Hanford fine sandy loam	41,216	7.0
Rough stony land	32,960	5.6
Hanford clay loam	14,080	2.4
Fresno clay loam	13,824	2.4
Daulton clay loam	9,280	1.6
Hanford coarse sand	9,216	1.6
Madera sand	8,640	1.5

Media sandy loam	7,168	1.2
Madera coarse sand	7,168	1.2
Media fine sandy loam	6,656	1.1
Daulton sandy loam	6.016	1.0
Riverwash	5,248	0.9
Fresno sand	3,584	.6
San Joaquin clay loam	3,520	.6
Media coarse sandy loam	3,392	.6
Hanford coarse sandy loam	3,392	.6
Madera clay loam	2,048	.3
Porterville clay adobe	1,792	.3
Fresno coarse sand	1,280	.2
Madera fine sandy loam	1,152	.2
San Joaquin gravelly sandy loam	1,152	.2
Daulton clay adobe	960	.2
Hanford fine sand	896	.2
Media clay adobe	448	.1
Total	588,160	(acres)

HANFORD COARSE SAND.

"(p. 19) The Hanford coarse sand consists "normally of 6 feet or more of a very micaceous "coarse sand of a light-brown or gravish-brown "color. In this area the Hanford coarse sand is of "little agricultural importance at the present time, *"owing to the lack of facilities for irrigation.*

"(p. 20) With an abundant supply of water it "is adapted to various fruits and alfalfa.

HANFORD FINE SAND.

"The Hanford fine sand consists of 6 feet or "more of a buff to light-brown micaceous fine "sand. Where water table is sufficiently close "to the surface or *where water may be had for "irrigation,* it is capable of producing truck crops "and alfalfa.

HANFORD COARSE SANDY LOAM.

"The Hanford coarse sandy loam consists of "6 feet or more of light-brown or buff-colored "micaceous course sandy loam.

"The surface is generally quite level and the "soil is free from alkali. *Without irrigation* the "type produces fair crops of grain in seasons "when the rainfall is well distributed or unusual- "ly abundant. *West* (p. 21) *of Madera* several "areas are under irrigation. Here alfalfa, "peaches, and grapes are grown, and the soil is "well adapted to these crops. It is also adapted to "truck crops and small fruits.

HANFORD CLAY LOAM.

"The soil of the Hanford clay loam consists of "6 feet or more of heavy clay loam, gray to dark "gray when dry and nearly black when wet. The "larger body covers many square miles and oc- "curs as a strip nearly 20 miles in length and with "an average width of 1 to 1 1-2 miles along the "San Joaquin River.

"As a whole the surface is fairly level, being "broken only by a few elongated depressions, or "swales, which are the nearly obliterated rem- "nants of former stream channels, or cut by "sloughs formed in times of flood.

"When not protected by levees, a considerable "proportion of the area is subject to overflow "during the spring and at rare intervals, during "the summer months.

"Some of this type is used for the production "of alfalfa, but the larger part is valued only for "grazing. *An extensive development is not to be "expected until means are taken to prevent the "annual overflow.*

HANFORD SANDY LOAM.

"(p. 22) The Hanford sandy loam consists of "6 feet or more of light-brown, grayish-brown, "or buff-colored micaceous sandy loam.

"*In the irrigated* sections this type is devoted to "alfalfa, grapes, figs olives, and peaches. Besides "being adapted to these crops, it is also suitable "for small fruits, melons, and truck crops.

HANFORD FINE SANDY LOAM.

"(p. 22) The Hanford fine sandy loam consists of 6 feet or more of a buff, light-brown, or grayish brown very micaceous fine sandy loam, possessing a loose friable structure and having a velvety feel.

"Along the San Joaquin and Chowchilla Rivers the surface is frequently gullied by former overflows or intersected by sloughs, while on the plains the level surface is broken by half obliterated beds of former drainage ways and by the channels of present intermittent streams. Under Natural conditions the drainage of this is good, *but in the southwestern part of the area, where flooding to produce grass for grazing has been carried to excess,* swampy conditions have developed, and various water grasses and tules have gained a foothold on the lower-lying areas.

"*Under irrigation* this type is devoted to a variety of fruits. It is also well adapted to general farming.

FRESNO SANDS.

"The Fresno sand consists of from 3 to 6 feet or more of incoherent sand. The soil is of light-gray or yellowish-gray and grayish-brown color.

"The larger part of the type is devoted to grain farming, and, in seasons of favorable moisture conditions very good crops are secured. That part of the soil not used for grain is devoted to the grazing of cattle or sheep. *Under irrigation* the Fresno sand is adapted to a wide range of fruit and truck crops.

FRESNO COARSE SAND.

"(p. 24) The Fresno coarse sand consists of a light-gray or yellowish-gray sand which usually changes with depth to a light-brown color. The texture of the material is uniform to a depth of 6 feet or more.

"Grain is usually sown on this type, but on ac- "count of the lightness of the soil and the absence "of hardpan the yields are usually very low. *"With an abundant supply of irrigation water and* "with the proper handling of the soil it is adapt- "ed to peaches, vines, and alfalfa.

FRESNO LOAMY COARSE SAND.

"The Fresno loamy coarse sand consists of "from 1 foot to 6 feet or more of very light-brown "or grayish coarse-textured loamy sand with a "relatively large content of very fine sand. (p. "25) The eastern bodies of this type possess fair "drainage, as the hardpan is rarely within 4 feet "of the surface.

"Excepting *those portions of this type which "are flooded to produce grass for grazing, only "about 3 square miles of this type is under irri- "gation.* Within the irrigated section some al- "falfa is grown, but grapes are the principal crop. "The remainder of the soil is devoted either to "grazing or to grain farming.

"This type ranges high among "the grain producing soils. The bet- "ter phases of the Fresno loamy "coarse sand *with irrigation* are adapted to al- "falfa, grapes, peaches, figs, olives, and other "small fruits.

FRESNO FINE SANDY LOAM.

"(p. 25) The Fresno fine sandy loam consists "of from 6 inches to 6 feet or more of light gray- "ish-brown or light-brown fine sandy loam.

"(p. 26) At the present time the Fresno fine "sandy loam *is not irrigated* and is devoted to "grazing or to grain farming. The "deeper areas of this soil forming "some of the more desirable grain "lands of the area. The shallow areas of the type "are, and probably always will be, used as pas-

"ture. *With irrigation,* this soil is adapted to al-
"falfa, fruits, melons, etc.

MADERA SAND.

"(p. 27) The Madera sand consists of from 3
"to 6 feet of light-brown medium-textured sand,
"which is light and friable under any condition
"of moisture.

"All of this soil is devoted to grain farming. It
"gives fair yields in seasons of favorable mois-
"ture conditions.

"*With a good supply of water* the more level
"portions may be profitably planted to alfalfa,
"grapes, figs, olives, and stone fruits.

MADERA COARSE SAND.

"(p. 28) The Madera coarse sand consists of
"4 to 6 feet or more of a light-brown to dark-
brown coarse sand.

"This type is devoted to grain farming, the
"yields varying largely with the topography. The
"higher bodies. where drainage is excessive, give
"low yields, while the lower bodies usually pro-
"duce fair crops. *Under irrigation the more level,*
"deeper areas of this soil would be adapted to
"alfalfa and small fruits.

MADERA SANDY LOAM.

"(p. 29) The Madera sandy loam consists of
"from 1 foot to 6 feet of a light-brown to dark-
"brown sandy loam, which is inclined to be sticky
"when wet and is very hard and compact when
"dry. In the more level areas of the soil the
"hardpan is always deeper, *and with a supply of*
"irrigation water these would be well adapted to
"vines, figs, olives, berries, and alfalfa, and fair-
"ly well adapted to the production of various stone
"fruits and almonds.

MADERA FINE SANDY LOAM.

"The Madera fine sandy loam consists of from
"50 inches to 6 feet or more of a light-brown fine
"sandy loam.

"This type occurs in several small bodies occur-
"pying comparatively low land bordering various
"streams in the area. All of it is devoted to grain
"farming, with fair results. *With irrigation,* it
"would be well adapted to alfalfa, grapes, and
"small fruits.

SAN JOAQUIN SANDY LOAM.

"(p. 30) The San Joaquin sandy loam consists
"of from 18 inches to 6 feet of reddish brown to
"yellowish-brown sandy loam.

"(p. 31) The San Joaquin sandy loam is de-
"voted entirely to grain farming, the yield varying
"greatly, and being dependent upon the distribu-
"tion and amount of rainfall and cultivation. This
"soil *under irrigation* is adapted to figs, olives,
"grapes and small fruits.

SAN JOAQUIN GRAVELLY SANDY LOAM.

"The San Joaquin gravelly sandy loam con-
"sists of from 2 to 6 feet or more of a dark-red
"sticky sandy loam.

"Only two bodies of this type were encountered
"in the survey of the area. These lie to the
"south and southwest of Table Mountain, where
"they occur as pronounced ridges rising above
"the surrounding soils. The surface, although
"having considerable slope, is free from minor
"irregularities.

"The soil is devoted to grain farming, *but with
"facilities for irrigation* it would be adapted to
"grapes, figs, olives, and probably to citrus fruits.

MEDIA SANDY LOAM.

"(p. 33.) The Media sandy loam consists of
"from 2 1-2 to 6 feet or more of a compact gray-
"ish-red to bright sandy loam.

"At present this soil is devoted to grazing and
"grain farming and *without irrigation* is value-
"less for other cultivated crops.

MEDIA CLAY ADOBE.

"(p. 34) The Media clay adobe consists of "from 36 inches to 6 feet or more of a heavy clay "adobe.

"This type ranks as one of the poorer grain "soils on account of its adobe structure and is "largely used for grazing. It is of little value "*without irrigation.*

DAULTON CLAY LOAM.

"(p. 35) The Daulton clay loam consists of "from 24 inches to 6 feet of light-brown to light "reddish brown compact clay loam. This type is "largely used for grazing, only the most level "areas being devoted to grain. Portions of the "soil would be of some value *when irrigated* for "fruit.

DAULTON CLAY ADOBE.

"The Daulton clay adobe consists of 6 feet or "more of dark-red to brownish-red clay adobe. "(p. 36) It is devoted to grain farming with "only fair results, as the elevation and cracking "of the soils cause it to dry out rapidly. *With "irrigation* it should be well adapted to grapes, "fruits adapted to a heavy soil, and probably to "citrus fruits when provided with wind breaks.

PORTERVILLE CLAY ADOBE.

"(p. 36) The Porterville clay adobe consists "of from 3 to 6 feet of a heavy black clay. Irriga- "tion would be necessary during a part of the "year.

RIVERWASH.

"(p. 37) The Riverwash consists of the grav- "els, sands, and fine sands occupying the beds of "intermittent streams and a few small, low areas "along the San Joaquin River. These are over- "flowed during several months of the year, when "the streams are at the highest stages, and are "dry during the remainder of the year.

IRRIGATION.

"(p. 39) The causes responsible for the lack "of development are the cost of conserving the "winter and spring floods of the Chowchilla and "Fresno Rivers, *and the inability to secure water "from the San Joaquin River.*

"The Chowchilla River, forming the northern "boundary of the area, is an intermittent stream, "flowing during the winter, spring, and early sum- "mer months. It has an estimated mean annual "discharge of about 62,000 acre-feet. During the "flood stage, some water is diverted onto alfalfa "and vineyard lands, but only a part of the flow "can be utilized, and the larger part passes be- "yond the area. No data are available regard- "ing the flow of the Fresno River, but during the "latter part of the rainy season, a large volume "of water passes away to the lowlands in the west- "ern part of the area, or to the northward be- "yond the limits of the survey. *It is believed to be "practicable to construct reservoirs in the foot- "hills, which would retain the flow "of these streams, and if such is "the case, several thousand acres could "be added to the irrigated sections of the "valley, and the land made much more valuable "than at the present time.*

"With the San Joaquin River the conditions are "very different. The flow of this stream is con- "stant.

SUMMARY.

"(p. 42) The Madera area is located near the "center of the San Joaquin Valley and occupies "all of the valley lands of Madera County.

"The larger part of the area *is nonirrigated,* "the land being devoted to dry farming of grain "and stock raising. In the irrigable sections al- "falfa, deciduous fruits, grapes, vegetable, and "truck crops do well.

"*There is an abundant supply of irrigation* "*water nearby*, but which for several reasons is "not now available for use on the higher lands "of the area. *When irrigation is secured,* these "lands will become valuable, as they are capable "of yielding abundant crops of alfalfa and fruits.

"Land values are, as a rule, low and the better "lands of the area are rising in price.

"Transportation is afforded by two transcon- "tinental railroads, which afford facilities for "reaching all of the large commercial centers of "the country.

"The City of Madera is the coun- "ty seat of Madera County, and is "the only (city) town of any size in the area. "Minturn and Berenda are small settlements "along the line of the Southern Pacific.

"At present a large part of the series is used "for grazing purposes or dry farmed to grain, the "yields being fair on lower bodies but on the high- "er, excessively drained bodies, they are very "low. *Under irrigation the more level and deep-* "er phases are well adapted to alfalfa, small "fruits, olives, figs, and stone fruits. Under irri- "gation the sands and sandy loams are adapted "to truck crops, alfalfa, peaches, olives, grapes, "figs, and small fruits. The clay loam is well "adapted to alfalfa and grain. At present these "soils are used chiefly for grazing purposes, al- "though there is a considerable acreage in al- "falfa."

THE SAN JOAQUIN RIVER IS UNDER THE CONTROL OF THE FEDERAL GOVERNMENT.

The Legislature of the State of California, after due consideration of the damages done by the flood waters of said river to the lands bordering its banks and, to the low lands and the valuable crops growing thereon between Hill's Ferry and Stockton and between Stockton and An-

tioch, and the great benefits that would accrue to the Federal Government by the storing of said flood waters and the sale and distribution thereof for irrigation purposes, decided that the construction of the proposed flood water canal and reservoir system from the San Joaquin, near Pollasky, would be too great for private enterprise or State undertaking, and thereupon passed the foregoing resolution instructing its Senators and Representatives in Congress to use all honorable means to secure the passage of a law in Congress by which the government of the United States will cause a proper survey of such proposed works to be made and thereafter with all reasonable dispatch to construct and operate said works, and dispose of said flood waters, so to be stored and conserved, for the purpose of irrigating said unirrigated arid lands.

THEREFORE: The people of the State of California earnestly pray:

That you assist by honorable means the passage of the Newlands Bill; and

That you render your assistance by honorable means, in securing the passage of a law in Congress appropriating a sufficient amount of money and cause surveys to be made with proper estimates for the construction and operation, if found practicable and feasible, of a Flood Water Canal and a system of Reservoirs from the San Joaquin river, near Pollasky, of sufficient capacity to carry to and through the many natural reservoir sites existing along the course, and to store therein all the flood waters that flow in the San Joaquin, and Fresno rivers, for the purpose of protecting the San Joaquin Valley from the flood waters flowing in the San Joaquin river, and for the purpose of controlling the navigable waters of said river, and navigation thereon as

far up said river as may be practicable, and directing that said flood waters be used and sold by the government to the land owners, Irrigation districts and irrigation companies along the route, for the purpose of irrigating 1,000,000 acres of arid lands, in Madera and Merced Counties, pursuant to the foregoing resolution passed and adopted by the Legislature of the State of California on December 24, 1911.

RESOLUTIONS

Indorsing said project and requesting that said canal and works be constructed and put in operation have been duly passed and adopted by the following civic bodies and municipalities, located in the counties of Madera, Merced, Stanislaus and San Joaquin, to wit:

Board of Supervisors of Madera County.
Madera County Chamber of Commerce.
City of Madera.
Madera Women's Improvement Club.
Merced County Chamber of Commerce.
City of Merced.
Merced Women's Improvement Club.
Board of Supervisors of Merced County.
Le Grande Board of Trade.
Livingston Women's Improvement Club.
City of Turlock.
Turlock Chamber of Commerce.
Ceres Chamber of Commerce.
Escalon Women's Improvement Club.
City of Modesto.
Modesto Women's Improvement Club.
Stanislaus County Chamber of Commerce.
City of Lodi.
Board of Supervisors of San Joaquin County.
Ladies Improvement Club of Salida, and
Raymond Women's Improvement Club.

And many other civic bodies and municipalities in the Great San Joaquin Valley are ready to do likewise.